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U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

09/856989INTERNATIONAL APPLICATION NO.
PCT/DE99/03659INTERNATIONAL FILING DATE
(23.11.99)
23 November 1999PRIORITY DATES CLAIMED
(30.11.98)
30 November 1998

TITLE OF INVENTION

METHOD AND WIRELESS TRANSCEIVER FOR REQUESTING AND PROCESSING INFORMATION

APPLICANT(S) FOR DO/EO/US

Bernd HESSING, Stefan GOSS and Oliver HARTKOPP

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
 2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
 3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
 4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
 5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
 6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
 7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
 8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
 9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (UNSIGNED)
 10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).
- Items 11. to 16. below concern other document(s) or information included:**
11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
 12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
 13. ☒ A **FIRST** preliminary amendment.

☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
 14. ☒ A substitute specification and marked up specification.
 15. ☐ A change of power of attorney and/or address letter.
 16. ☒ Other items or information: Copies of International Search Report, Preliminary Examination Report and Form PCT/RO/101.

EXPRESS MAIL NO. EL594612657US

09/856989

531 Rec'd PC

30 MAY 2001

- 17.
- ☒
- The following fees are submitted:

Basic National Fee (37 CFR 1.492(a)(1)-(5)):

Search Report has been prepared by the EPO or JPO \$860.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) ... \$690.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482) but
international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$710.00Neither international preliminary examination fee (37 CFR 1.482) nor international
search fee (37 CFR 1.445(a)(2)) paid to USPTO \$1,000.00
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all
claims satisfied provisions of PCT Article 33(2)-(4) \$100.00

CALCULATIONS | PTO USE ONLY

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$860

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months
from the earliest claimed priority date (37 CFR 1.492(e)).

\$

Claims	Number Filed	Number Extra	Rate		
Total Claims	25 - 20 =	5	X \$18.00	\$90.00	
Independent Claims	4 - 3 =	1	X \$80.00	\$80.00	
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$	

TOTAL OF ABOVE CALCULATIONS =

\$1,030.00

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must
also be filed. (Note 37 CFR 1.9, 1.27, 1.28).

\$

SUBTOTAL =

\$1,030.00

Processing fee of \$130.00 for furnishing the English translation later the ☐ 20 ☐ 30
months from the earliest claimed priority date (37 CFR 1.492(f)).

+

\$

TOTAL NATIONAL FEE =

\$1,030.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property

+

\$

TOTAL FEES ENCLOSED =

\$1,030.00

Amount to be:
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\$

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\$

- a. ☐ A check in the amount of \$_____ to cover the above fees is enclosed.
- b. ☒ Please charge my Deposit Account No. 11-0600 in the amount of **\$1,030.00** to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 11-0600. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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NAME

5/30/01

DATE

CUSTOMER NO. 26646

09/856989

531 Rec'd PCT. 30 MAY 2001

[10191/1791]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s) : HESSING et al.
Serial No. : To Be Assigned
Filed : Herewith
For : METHOD AND WIRELESS TRANSCEIVER FOR
REQUESTED AND PROCESSING INFORMATION
Examiner : To Be Assigned
Art Unit : To Be Assigned

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

SIR:

Kindly amend the above-identified application before examination, as set forth below.

IN THE TITLE:

Please replace the title with the following:

--METHOD AND WIRELESS TRANSCEIVER FOR REQUESTING AND
PROCESSING INFORMATION--.

IN THE DRAWINGS:

Please amend the drawings as indicated on the attached red-marked sheet.

IN THE SPECIFICATION:

Please amend the specification, including abstract, pursuant to the attached substitute specification. Also attached is a marked up version of the specification, indicating deleted and added sections. No new matter has been added.

IN THE CLAIMS:

Please cancel claims 1-20 in the underlying PCT application, without prejudice.

Please add the following new claims:

21. (New) A method for requesting and processing information, comprising:
transmitting by a wireless transceiver a first information query over a wireless network, the first information query being transmitted as a short message, the first information query being provided with a first predefined validity time value; and
transmitting information to the wireless transceiver in response to the first information query, the information being received by the wireless transceiver over the wireless network in a form of short messages, the information being provided with a second predefined validity time value by the service provider.
22. (New) The method of claim 21, wherein the wireless network is a mobile wireless network.
23. (New) A method for requesting and processing information, comprising:
providing an information query with a first predefined validity time value;
transmitting by a wireless transceiver the information query over a wireless network if the first predefined validity time value has not been exceeded, the first information query being transmitted as a short message; and
if the information query is transmitted, providing by a service provider information responsive to the information query and transmitting the information to the transceiver over the wireless network in the form of short messages, the information being provided with a second predefined validity time value.

24. (New) A method for requesting and processing information, comprising:
 providing an information query with a first predefined validity time;
 transmitting by a wireless transceiver the information over a wireless network if the first predefined validity time has not been exceeded, the first information query being transmitted as a short message; and
 if the information query is transmitted, providing by a service provider information responsive to the information query, the information being provided with a second predefined validity time value, and transmitting the information to the transceiver over the wireless network if the second predefined validity time value has not been exceeded, the information being transmitted as short messages.
25. (New) The method of claim 21, wherein the first information query is generated based on a position of the wireless transceiver.
26. (New) The method of claim 21, further comprising:
 registering in the wireless transceiver a time of the first information query, and
 generating a message when a first predefined time period after the transmitting of the first information query is exceeded.
27. (New) The method of claim 26, further comprising:
 suppressing use of the transmitted information when the first predefined time period after the transmitting of the first information query is exceeded.
28. (New) The method of claim 26, further comprising:
 automatically transmitting a second information query after transmitting the first information query and after a second predefined time period is exceeded, the second predefined time period starting at a time of the transmitting of the first information query, the first predefined time period being restarted at a time of the transmitting of the second information query, the second predefined time period being greater than the first predefined time period.
29. (New) The method of claim 26, further comprising:

transmitting upon user request a second information query after transmitting the first information query; and

restarting the first predefined time period at a time of the transmitting of the second information query.

30. (New) The method of claim 28, wherein the information includes traffic information.

31. (New) The method of claim 28, wherein the information includes traffic information of a specific area.

32. (New) The method of claim 28, wherein the information contains at least one traffic situation report, a life of the at least one traffic situation report exceeding a predefined minimum life.

33. (New) The method of claim 32, wherein the at least one traffic situation report is according to a TMC standard.

34. (New) The method of claim 32, wherein the predefined minimum life is greater than a sum of the first predefined time period and the second predefined time period.

35. (New) The method of claim 32, further comprising:

selecting at least one navigation message from the at least one traffic situation report in a distributor device, the selected at least one navigation message being made available to a navigation unit.

36. (New) A wireless transceiver operating over a wireless network, comprising:

a transmitter to transmit a first information query as a short message over the wireless network, the first information query being provided with a first predefined validity time value;

a receiver to receive information responsive to the first information query, the information being received as a short message over the wireless network.

37. (New) The wireless transceiver according to claim 36, wherein the information includes at least one traffic situation report.

38. (New) The wireless transceiver according to claim 36, further comprising:
an arrangement configured to register a time of the first information query;
and
an arrangement configured to generate a message after a first predefined time period after the first information query is transmitted is exceeded.

39. (New) The wireless transceiver according to claim 38, further comprising:
an arrangement configured to automatically transmit a second information query after a second predefined time period has been exceeded;
an arrangement configured to start the second predefined time period at a time when the first information query is transmitted; and
an arrangement configured to restart the first predefined time period at a time when the second information query is transmitted,
wherein the second predefined time period is greater than the first predefined time period.

40. (New) The wireless transceiver of claim 38, further comprising:
an arrangement configured to transmit a second information query upon user request; and
an arrangement configured to restart the first predefined time period at a time when the second information query is transmitted.

41. (New) The wireless transceiver of claim 37, further comprising:
a memory to store the at least one traffic situation report.

42. (New) The wireless transceiver of claim 36, further comprising:
an arrangement configured to determine a position of the wireless transceiver.

43. (New) The wireless transceiver of claim 36, further comprising:

an arrangement configured to determine a position of the wireless transceiver in a road network.

44. (New) The wireless transceiver of claim 36, further comprising:
an arrangement configured to generate and transmit the first information query based on a position of the wireless transceiver.

45. (New) The wireless transceiver of claim 37, further comprising:
an arrangement configured to select a navigation message from the traffic situation report and for making the navigation message available to a navigation unit.

REMARKS

This Preliminary Amendment cancels, without prejudice, claims 1-20 in the underlying PCT Application No. PCT/DE99/03659 and adds, without prejudice, new claims 21-45. The new claims conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

The amendments to the specification and abstract reflected in the substitute specification are to conform the specification and abstract to U.S. Patent and Trademark Office rules, and do not introduce new matter into the application.

The underlying PCT Application No. PCT/DE99/03659 includes an International Search Report, issued March 27, 2000, a copy of which is included. The Search Report includes a list of documents that were considered by the Examiner in the underlying PCT application.

The underlying PCT Application No. PCT/DE99/03659 also includes an International Preliminary Examination Report, issued November 10, 2000. A translation of the International Preliminary Examination Report is included herewith.

It is respectfully submitted that the present invention is new, non-obvious, and useful. Prompt consideration and allowance of the claims are respectfully requested.

Respectfully Submitted,

KENYON & KENYON

Dated: 5/30/81

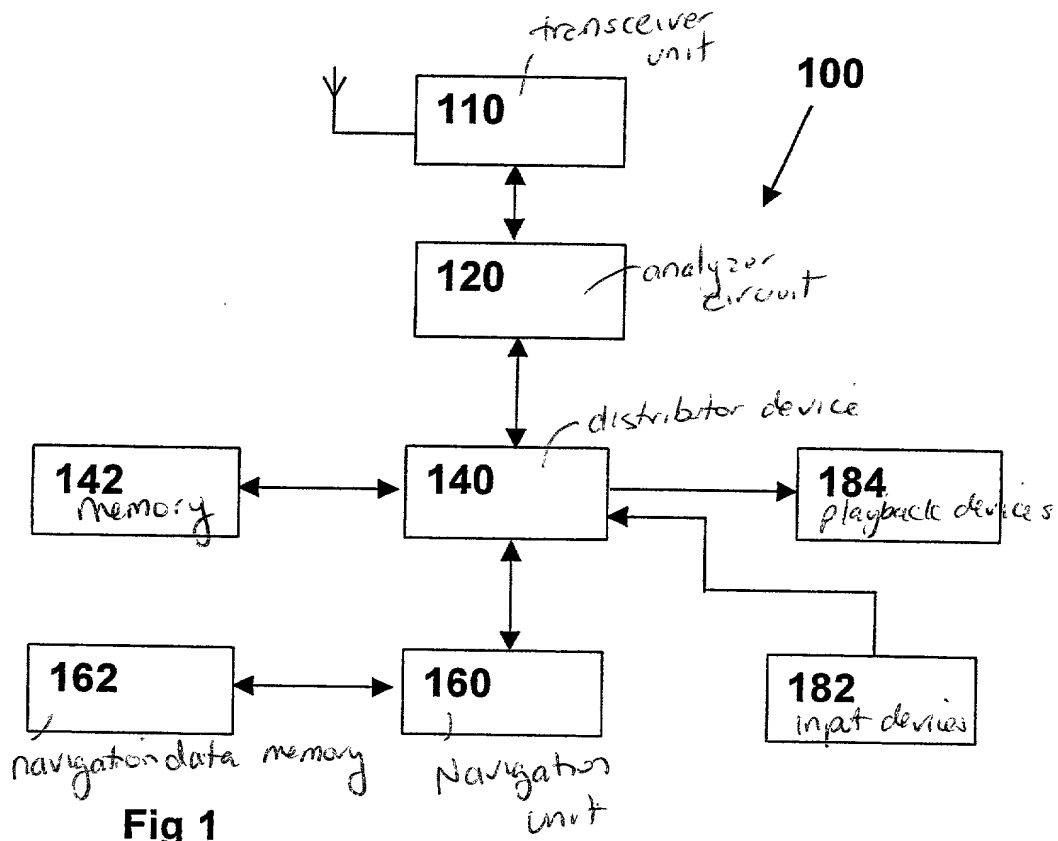
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METHOD AND WIRELESS TRANSCEIVER FOR REQUESTING AND
PROCESSING INFORMATION

Background Information

5 The present invention is based on a method according to
the definition of the species of the main claim and on a
wireless transceiver according to the definition of the
species of alternative independent Claim 13. World Patent
98/26395 describes a method for traffic information in
which data is transmitted upon request and/or
automatically between a central unit and a mobile
10 subscriber unit, and in which the data contains traffic
information which is output upon request and/or
automatically by the mobile subscriber unit to the
subscriber.

15 Advantages of the Invention

The method according to the present invention having the
features of the main claim and the wireless transceiver
according to the present invention having the features of
20 alternative independent Claim 13 has the advantage over
the related art that information queries transmitted by a
wireless transceiver to a service provider and the
information returned by the service provider are provided
with predefined validity time values. Thus the maximum
25 time period for obtaining information can be calculated
even when no data selection connection or the like is
possible or convenient.

30 The measures cited in the subclaims describe advantageous
refinements and improvements of the method described in
the main claim and of the wireless transceiver described

in the alternative independent claim.

It is advantageous that the information queries are transmitted as short messages over a wireless network, in particular a mobile wireless network, for example, and that the information queries are provided with a first validity time value. When the validity time value is exceeded but the information query has not yet been transmitted to the service provider, the information query is automatically deleted in the wireless network and thus it cannot initiate any information to be returned by the service provider. This contributes to simplified error processing of the method according to the present invention and in a simplified design of the wireless transceiver according to the present invention. Furthermore, it is advantageous that the returned information is also received in the form of short messages, SMS messages in accordance with the GSM standard in particular, the returned information being provided with a second validity time value by the service provider which also contributes to simplified error processing, in particular in the case of communication disturbances.

It is advantageous that the wireless transceiver includes means for determining its position, in particular in a road network. Thus information queries can be requested depending on the position of the wireless transceiver.

It is particularly advantageous that information queries are generated on the basis of the position of the wireless transceiver. Thus, obtaining information is simplified, for example, reducing the amount of information to be transmitted.

Furthermore, it is particularly advantageous that a message is generated in the wireless transceiver and/or

the use of the information returned by the central station to the wireless transceiver is suppressed if a first predefined time period has been exceeded after the first information query has been transmitted. This makes it possible to respond to the fact that information was received with a delay, for example, by calling a user's attention to this fact and/or by ignoring the returned information, for example, if this information has become obsolete and therefore no longer relevant due to a long time delay in the transmission of information for processing, for example, for the navigation of a motor vehicle.

It is particularly advantageous that, after a first information query, a second subsequent information query is automatically transmitted after a second predefined time period has been exceeded, the second predefined time period being started at the time of the first information query, the first predefined time period which causes the returned information to be suppressed after it has been exceeded being restarted at the time of the second information query, and the second predefined time period being greater than the first predefined time period. This makes it possible to send out information queries repeatedly and to keep the information processing, for example, for calculating the most favorable route of a vehicle in the presence of traffic problems on certain road segments, permanently up-to-date through the returned information. Furthermore, by using automatic information queries, it is also possible to keep the processed information constantly up-to-date without user intervention, resulting in a higher degree of operating reliability of the method according to the present invention and the wireless transceiver according to the present invention for requesting and processing information, in particular when the user is performing some activity, for example, driving a vehicle.

Furthermore, it is advantageous in another embodiment of the method according to the present invention and the wireless transceiver according to the present invention, that a second information query following the first
5 information query in time is transmitted upon user request, the first predefined time period being restarted at the time the second information query is issued. Thus an information query can be sent upon user request, which may be desirable in the event of unexpected changes in
10 the situation, for example, a change in destination. In addition, the number of information queries in the case of an information query upon user request can be kept lower and information queries can be transmitted in a controlled manner, for example, before a decision to be
15 made, in particular regarding road conditions, resulting in reduced telecommunications traffic and reduced costs when the information queries are associated with costs.

Furthermore, it is advantageous if the returned
20 information contains traffic situation reports, in particular according to the TMC standard, and the traffic situation reports preferably relate to one or more specific areas. Thus only those traffic situation reports are taken into consideration in the wireless transceiver
25 which, for example, are or may become relevant for the navigation to be performed, since they concern areas which correspond to areas queried in the information query or are adjacent thereto, for example.

Furthermore, it is advantageous that the life of the traffic situation reports exceeds a predefined minimum
30 life. The traffic situation reports contained in the returned information are therefore received in all cases.

In a particularly advantageous embodiment of the method according to the present invention and the wireless
35 transceiver according to the present invention, the

predefined minimum life of the traffic situation reports is greater than the sum of the predefined first time period and the predefined second time period. Traffic situation reports contained in returned information can thus not be ignored because of their excessively short life alone during information processing. Thus no short-term loss of traffic situation reports occurs in the wireless transceiver in the case of a time spread in obtaining the messages, which is not critical in and of itself.

Furthermore, it is advantageous if a number of appropriate and relevant traffic situation reports is selected from the amount of traffic situation reports received, and is made available to a processing unit, in particular a navigation unit. This can reduce the processing costs by concentrating on the relevant traffic situation reports, making processing speedier, allowing the hardware and the software to be kept simpler, thus reducing costs.

It is furthermore advantageous that the wireless transceiver includes a memory in which received traffic situation reports can be stored. Thus the traffic situation reports can be read individually from returned information. The traffic situation reports can be used without all the returned information being fully available in the case of a plurality of returned information items received by the wireless transceiver. The method according to the present invention and the wireless transceiver according to the present invention compatible with receiving traffic situation reports via a unidirectional communication channel, for example, via radio, broadcast SMS, or the like. Furthermore, traffic situation reports can thus be used in a practical manner when the respective returned information is not fully available

Another advantage of the wireless transceiver according to the present invention is that the wireless transceiver includes means for selecting navigation messages from the traffic situation reports and for making them available to a navigation unit. This reduces the resources needed in the navigation unit.

Drawing

Embodiments of the present invention are illustrated in the drawing and elucidated in detail in the description that follows.

Figure 1 shows a block diagram of a wireless transceiver;

Figure 2 shows a transmit/receive diagram according to a first embodiment of the method according to the present invention and the mode of operation of the wireless transceiver according to the present invention between the wireless transceiver, a wireless network, and a service provider, and

Figure 3 shows a transmit/receive diagram according to a second embodiment of the method according to the present invention and the mode of operation of the wireless transceiver according to the present invention between the wireless transceiver, a wireless network, and a service provider.

Description of the Exemplary Embodiments

Figure 1 shows a block diagram of a wireless transceiver 100. Wireless transceiver 100 includes a transceiver unit 110, which is connected to an analyzer circuit 120. Analyzer circuit 120 is connected to a distributor device 140. Furthermore, a memory 142, a navigation unit 160,

playback devices 184, and input devices 182 are connected to distributor device 140. Navigation unit 160 is also connected to a navigation data memory 162. Transceiver unit 110 can be designed, in particular, so that it includes a receptacle for a portable telecommunications terminal, for example, a cell phone, so that transceiver unit 110 cannot be operated until the portable telecommunications terminal is connected to transceiver unit 110, for example, plugged in or the like. The different units and devices of wireless transceiver 100 can be distributed among different housings or integrated in a single housing. In particular, individual units and devices of wireless transceiver 100 can be combined with an additional device in a housing. Thus, for example, input devices 182 and playback devices 184 can be integrated into a wireless receiver. In this case the wireless receiver is connected to wireless transceiver 100 via a wire-bound or wireless connection, for example, a CAN bus or the like. The wireless receiver is provided with a decoder for traffic situation reports, in particular, according to the RDS-TMC system, so that the traffic situation reports can be received by the wireless transceiver via the link between the wireless transceiver and the radio receiver.

Figure 2 shows the communication process over time according to a first embodiment of the method according to the present invention and the mode of operation of wireless transceiver 100 according to the present invention between a wireless transceiver 100, a wireless network 50, and a service provider 10 with the aid of a transmit/receive diagram. A first information query 1000 is transmitted by wireless transceiver 100 to wireless network 50 to be forwarded to service provider 10. First information query 1000 is provided by wireless transceiver 100 with a first validity time value 1402. First validity time value 1402 causes first information

query 1000 no longer to be able to be transmitted to service provider 10 after the lapse of first validity time value 1402. If first information query 1000 was not transmitted to service provider 10 over wireless network 50 during the time period of first validity time value 1402, first information query 1000 is lost.

When first information query 1000 has been successfully transmitted to service provider 10, service provider 10 processes the contents of first information query 1000 and, after a certain processing time, returns one or more items of information 1100 to wireless transceiver 100 over wireless network 50. Service provider 10 provides returned information 1100 with a second validity time value 1403, which specifies the time period during which returned information 1100 is kept available in network 50 for transmission to wireless transceiver 100. If returned information 1100 is held available in wireless network 50 during a time period specified by second validity time value 1403 without returned information 1100 being transmitted to wireless transceiver 100, returned information 1100 is lost. If returned information 1100 is transmitted to wireless transceiver 100 within a time period specified by second validity time value 1403, wireless transceiver 100 can process returned information 1100. This takes place if first predefined time period 1401 has not been exceeded since the time when first information query 1000 was registered. If returned information 1100 was not received until after the lapse of first predefined time period 1401 after first information query 1000 was issued by wireless transceiver 100, a message is generated and/or processing of information 1100 which was returned too late is suppressed. The message can be forwarded in wireless transceiver 100 via distributor device 140 to playback devices 184 and output to a user there. It is furthermore possible to forward the message to navigation unit 160 or

the like.

According to the method according to the present invention and the wireless transceiver 100 according to the present invention, it is also possible that a second information query 1001 following first information query 1000 in time is transmitted by wireless transceiver 100 to service provider 10 over wireless network 50. Second information query 1001 can be issued due to a plurality of events, for example, automatically or also upon user request.

Second information query 1001 is transmitted automatically when a second predefined time period 1404 is exceeded. Second predefined time period 1404 is started at the time of first information query 1000. First predefined time period 1401 is restarted at the time of second information query 1001. Furthermore second predefined time period 1404 is greater than first predefined time period 1401. When information queries 1000, 1001 are automatically repeated, any desired number of additional information queries, which may have different contents, can be transmitted. Between two successive information queries 1000, 1001, the earlier information query is referred to as first information query 1000 and the subsequent information query is referred to as second information query 1001. First and second predefined time periods 1401, 1404 are both started at the time of first information query 1000. Since first predefined time period 1401 is smaller than second predefined time period 1404, first predefined time period 1401 ends while second predefined time period 1404 continues. After the lapse of second predefined time period 1404, second information query 1001 is issued and both the first and second predefined time periods 1401, 1404 are restarted.

Figure 3 shows the communication process over time according to a second embodiment of the method according to the present invention and the mode of operation of wireless transceiver 100 according to the present invention between a wireless transceiver 100, a wireless network 50, and a service provider 10 with the aid of a transmit/receive diagram. The same reference symbols from Figure 2 refer to essentially identical segments of the method. Information queries 1000, 1001 can also be initiated by a user request 1821. Between two successive information queries 1000, 1001, the earlier information query is again referred to as first information query 1000 and the subsequent information query is referred to as second information query 1001. Since user request 1821, rather than second predefined time period 1404 being exceeded, is used as a criterion for initiating second information query 1001, the second predefined time period does not have to be started at the time of first information query 1000 in the present embodiment. At the time of first information query 1000, only first predefined time period 1401 must be started and it must be restarted when second information query 1001 is issued.

Wireless transceiver 100 according to the present invention is suitable for performing the method according to the present invention. Transceiver unit 110 transmits first information query 1000 over wireless network 50 to service provider 10. In a first timer assigned to analyzer circuit 120, a first clock is started when first information query 1000 is issued by transceiver unit 110. Returned information 1100 is analyzed by the analyzer circuit. The contents of returned information 1100 can be stored in memory 142 using distributor device 140.

Navigation unit 160 calls up data stored in memory 142 via distributor device 140 to update the data stored in navigation data memory 162. If transceiver unit 110

receives returned information 1100 and, after comparison with the clock of the first timer, it is determined that first predefined time period 1401 has been exceeded, the message is generated and/or forwarded by distributor device 140 for use by other units or devices of wireless transceiver 100.

Results of the information processing in navigation unit 160 can be forwarded to playback devices 184 via distributor device 140 and made available there to a user of any type, visually or acoustically in particular.

The user inputs information via input devices 182, for example, a keyboard, for example, to have the wireless transceiver input navigation destinations and the like. Furthermore, the information about user request 1821 can be forwarded to a second information query 1001 via distributor device 140 to transceiver unit 110 using inputs devices 182. Transceiver unit 110 then transmits second information query 1001.

In the case where wireless transceiver 100 is set to automatically repeat information queries 1000, 1001, it can be determined by comparing a clock of a second timer assigned to analyzer circuit 120 that second predefined time period 1404 has been exceeded, the clock of the second timer having been restarted at the time of the transmission of first information query 1000. In this case, second information query 1001 is transmitted by transceiver unit 110.

Any number of returned information items 1100 can be received by the wireless transceiver in response to an information query 1000, 1001. This simplifies transmission and reception since it is not necessary to check for completeness. Processing of additional returned information 1100 takes place in the manner similar to the

processing of returned information 1100 after the
transmission of first information query 1000. Information
transmitted by service provider 10 which does not
originate from an information query 1000, 1001 of
5 wireless transceiver 100 can also be processed by the
wireless transceiver. In particular, important
information such as traffic situation reports regarding a
vehicle being driven in the wrong direction on a highway
may be transmitted in such a mode of operation.

10 The method to according to the present invention and
wireless transceiver 100 according to the present
invention can be used for requesting and processing any
type of information. In particular, the method according
15 to the present invention and wireless transceiver 100
according to the present invention are well suited for
navigation information which facilitates navigation for a
mobile user. In particular, the method according to the
present invention and wireless transceiver 100 according
20 to the present invention are well suited for use in a
vehicle on land, water, or in the air. In the following,
a particularly advantageous embodiment of the method
according to the present invention and of wireless
transceiver 100 according to the present invention for
25 use in a land vehicle mainly on roads is described. For
navigation in a road network it is recommended that the
location information and the possible connection options
provided by the road network be stored in the road
vehicle, which is made possible according to the present
30 invention by storing first location information, in
particular static information about the road network, in
navigation data memory 162.

Navigation unit 160 according to the present invention
35 includes means for determining the position of the
vehicle at any time, for example, in regular time
intervals. This is accomplished according to the present

invention through analyses of a GPS system (Global Positioning System). Furthermore, additional data sources can be used for position determination, in particular velocity data, angle or orientation data, or the like.

5 Velocity data can be provided by an onboard velocity sensor. Angle or orientation data can be provided, for example, by an angular acceleration sensor or the like. Navigation is made possible, in particular for users familiar with the area, through the possibility of
10 location determination and the presence of stored first location information of the road network.

By supplementing the first location information of the road network with up-to-date information, for example,
15 concerning the traffic conditions on certain stretches of road, improved navigation becomes possible, which allows time-optimized navigation in particular. For this purpose, information from service provider 10 is transmitted over wireless network 50 to wireless
20 transceiver 100 located in the vehicle. The wireless network is designed, for example, as a bidirectional wireless network, in particular of the type of a mobile telephone network according to the GSM standard. Service provider 10 receives information queries 1000, 1001 of
25 wireless transceiver 100 and transmits information 1100, in particular for payment.

In the exemplary embodiments, communication takes place over wireless network 50 between wireless transceiver 100
30 and service provider 10, in particular via short messages, for example SMS short messages according to the GSM standard or the like. Service provider 10 selects returned information 1100 from the information available, for example, concerning disturbances in the traffic flow
35 in the road network or the like, as a function of information queries 1000, 1001. In the method according to the present invention, information queries 1000, 1001

contain second location information, for example,
regarding the position of the vehicle, the areas on the
intended route, or the like. In particular, second
location information may also be generated by wireless
transceiver 100 on the basis of first location
information. For example, when two different routes are
considered in the navigation unit for optimizing
navigation, the second location information of the
respective information query 1000, 1001 can be configured
so that returned information 1100 contains all traffic
situation reports 1200 concerning the relevant road
segments. Thus, the second information can also be
generated on the basis of the position of wireless
transceiver 100 and, at the same time, on the basis of
the first information.

Using the second location information, service provider
10 can put together the information requested and make it
available to wireless transceiver 100 as returned
information 1100. In particular, information queries
1000, 1001 concern areas in the extended vicinity of the
stretches of the intended route.

Returned information 1100 may include one or more traffic
situation reports 1200. Traffic situation reports 1200
may be transmitted in an encoded or unencoded form.
According to the present invention, traffic situation
reports 1200 are encoded according to the TMC (Traffic
Message Channel) code, which is defined in European
preliminary standard ENV-278-4-1-0012, June 1996.

In the present embodiment, the service provider evaluates
information queries 1000, 1001 using the second location
information and compares the latter with the available
traffic situation reports, in particular TMC messages or
the like. If a TMC message corresponds to the second
location information of information query 1000, 1001, it

is forwarded in the form of an SMS short message to wireless transceiver 100. A plurality of TMC messages can be transmitted in an SMS short message. TMC messages concern third location information (Location according to the TMC code) which is determined by fourth location information (PrimaryLocation, see TMC standard) and the extent of the traffic disturbance (Extent, see TMC standard). A TMC message corresponds to the second location information when the third location information indicates point locations (Point Location, see TMC standard) and at least one of the third location information items affected by the TMC message is located in the area defined by the second location information of the information query. All the third location information items which are defined by the fourth location information and the extent of the traffic disturbance are affected by a message; the extent of disturbance may assume values between 0 and 31; thus, point locations may also be affected by a message 32.

The service provider may optimize its service quality by placing particularly important traffic situation reports 1200 at the beginning of returned information 1100. Less important traffic situation reports 1200 can be placed at the end of returned information 1100 or transmitted in additional returned information 1100 to wireless transceiver 100. Furthermore, the service provider may reduce the complexity of its queries by keeping a limited amount of predefined queries available and calling them up on the basis of the queried second location information. Such an option exists as long as all the traffic situation reports 1200, rather than a predefined first number of traffic situation reports 1200, affected by the queried second location information are selected. In an advantageous embodiment, the wireless transceiver according to the present invention may store only a predefined first number of, for example, one hundred,

traffic situation reports. Thus an overflow occurs in the memory for traffic situation reports 1200 in wireless transceiver 100 if the service provider returns a larger number of traffic situation reports than the predefined first number. Wireless transceiver 100 does not recognize that traffic situation reports 1200 are also transmitted from areas outside the regions contiguous to second location information. All traffic situation reports 1200 contained in returned information 1100 are treated in the same way in wireless transceiver 100.

The service provider has the option of transmitting traffic situation reports 1200 once queried and transmitted, to wireless transceiver 100 without a new information query 1000, 1001. Thus, changes in the contents of traffic situation reports 1200 can also be communicated without a new information query 1000, 1001. It is, however, not ensured that traffic situation report 1200 is also received and evaluated by wireless transceiver 100. The service provider does not transmit any traffic situation reports 1200 whose life is less than a predefined minimum life 1220. Life 1240 of a traffic situation report 1200 can be represented, for example, by the ALERT-C-Persistence which is defined in the TMC code. In the method according to the present invention, minimum life 1220 is set at 30 minutes.

In order to counteract the danger of obsolete traffic situation reports stored in wireless transceiver 100, the service provider may terminate traffic situation reports 1200 whose life 1240 has been exceeded not by automatic deletion after the lapse of life 1240, but through an explicit delete message. Delete messages are also traffic situation reports 1200 according to the TMC standard and also have a life 1240 at least equal to minimum life 1220. Delete messages themselves can be removed after the lapse of life 1240 without any comments.

The service provider encodes returned information 1100 so that they have validity in wireless network 50 only for a period of time corresponding to a first validity time value 1402. According to the present invention, returned information 1100 is transmitted as an SMS short message according to the GSM standard, for example, to wireless transceiver 100. According to the GSM standard, an SMS short message can be provided with a validity time value (TP Validity-Period, see GSM standard document RE/SMG-040340PR4, October 1996). The validity time value of an SMS message may vary for a validity time value of up to 12 hours in multiples of five minutes in a certain encoding of the validity time value. For example, with the method according to the present invention and with wireless transceiver 100 according to the present invention, first validity time value 1402 is set at five minutes.

A buffer memory assigned to transceiver unit 110 can be provided in order to store returned information 1100 until analyzer circuit 120 is capable of evaluating returned information 1100 and traffic situation reports 1200 contained therein. A first processing of returned information 1100 takes place in analyzer circuit 120, where traffic situation reports 1200 can be decoded. The traffic situation reports 120 can either be stored in memory 142 or, at least in part, output to the user with the aid of playback device 184 via distributor device 140.

Distributor device 140 recognizes in wireless transceiver 100 according to the present invention which traffic situation reports 1200 are relevant for navigation using signals of navigation unit 160 and sends these messages to navigation data memory 162 via navigation unit 160 as navigation messages 1300. On the basis of the information present in navigation data memory 162, both the first

location information, in particular information concerning the road network, as well as the data from navigation messages 1300, the optimum route, which can be optimized in particular in terms of time, can be calculated in navigation unit 160.

In the present embodiment, first predefined time period 1401 is set at 13 minutes, for example. Second predefined time period 1404 which, when exceeded, causes second information query 1001 to be transmitted by wireless transceiver 100 is set in the present embodiment at 15 minutes, for example. Thus the condition that first predefined time period 1401 is less than second predefined time period 1402 is met. First and second validity time values 1402, 1403 are set at five minutes, for example.

Minimum life 1220 is set in the present embodiment at 30 minutes. Thus the condition that the minimum life is greater than the sum of first predefined time period 1401 and second predefined time period 1404 is met.

Returned information 1100 may reach wireless transceiver 100 either after first predefined time period 1401 after first information query 1000 has been transmitted or after second predefined time period 1404, so that returned information 1100 which was generated by service provider 10 on the basis of first information query 1000 is only received after second information query 1001 has been transmitted by wireless transceiver 100. As a result, first predefined time period 1401 was restarted by second information query 1001 and returned information 1100 belonging to first information query 1000 is assumed to be valid. This error cannot be recognized. It has a beneficial effect if traffic situation reports 1200 contained in returned information 1100 are not obsolete. Since returned information 1100 should be stored in the

wireless network according to second validity time value 1403 at the most, the likelihood that these traffic situation reports are current is high. In normal operation, the likelihood that traffic situation reports are available earlier in such a case is also high. The occurrence of errors may have an advantageous effect on the operation of wireless transceiver 100 according to the present invention.

In an advantageous embodiment of the method according to the present invention and wireless transceiver 100 according to the present invention, information 1100 received by transceiver unit 110 of wireless transceiver 100 is not associated with information queries 1000, 1001, and traffic situation reports 1200 that are transmitted without information query 1000, 1001, for example via a cell broadcast short message service (CBS) of service provider 10, can also be processed. In this case information 1100 returned by service provider 10 is received within first predefined time period 1401 after first information query 1000 has been transmitted.

What is claimed is:

1. A method for requesting and processing information in which a first information query (1000) is transmitted by a wireless transceiver (100) and information (1100) is made available by a service provider (10), this information being transmitted to the requesting wireless transceiver (100),

wherein the information query (1000) is transmitted in particular as a short message over a wireless network (50), in particular a mobile wireless network, the information query (1000) being provided with a predefined first validity time value (1402) and the returned information (1100) being received in particular in the form of short messages by the wireless transceiver (100) over a wireless network (50), the returned information (1100) being provided with a predefined second validity time value (1403) by the service provider (10).

2. The method according to Patent Claim 1, wherein after the first validity time value (1402) has been exceeded, transmission of the information query (1000, 1001) by the wireless network (50) is suppressed.

3. The method according to one of the preceding patent claims, wherein after the second validity time value (1403) has been exceeded, the transmission of the returned information (1100) by the wireless network (50) is suppressed.

4. The method according to one of the preceding patent claims, wherein the first information query (1000) is generated on the basis of the position of the wireless transceiver (100).

5. The method according to one of the preceding patent claims,
wherein the time of the first information query (1000) is registered in the wireless transceiver (100) and a message is generated when a first predefined time period (1401) after the transmission of the first information query (1000) is exceeded.

6. The method according to Patent Claim 5,
wherein the use of the returned information (1100) is suppressed when the first predefined time period (1401) after the transmission of the first information query (1000) has been exceeded.

7. The method according to one of the preceding patent claims,
wherein a second information query (1001) following the first information query (1000) in time is automatically transmitted after a second predefined time period (1404) has been exceeded, the second predefined time period (1404) being started at the time of the first information query (1000), the first predefined time period (1401) being restarted at the time of the second information query (1001), and the second predefined time period (1404) being greater than the first predefined time period (1401).

8. The method according to one of Patent Claims 1 through 6,
wherein a second information query (1001) following the first information query (1000) in time is transmitted upon user request (1821), the first predefined time period (1401) being restarted at the time of the second information query (1001).

9. The method according to one of the preceding patent claims,

wherein the returned information (1100) includes traffic information, preferably of a specific area.

10. The method according to Patent Claim 9, wherein the returned information (1100) contains traffic situation reports (1200), in particular according to the TMC standard, and the life (1240) of the traffic situation reports (1200) must exceed a predefined minimum life (1220).

11. The method according to Patent Claim 10, wherein the minimum life (1220) is greater than the sum of the predefined first time period (1401) and the predefined second time period (1404).

12. The method according to Patent Claim 10 or 11, wherein navigation messages (1300) are selected from the traffic situation reports (1200) in a distributor device (140) and are made available to a navigation unit (160).

13. A wireless transceiver (100) for a method according to one of the preceding patent claims, wherein the wireless transceiver (100) includes means for transmitting information queries (1000, 1001), in particular in the form of short messages over a wireless network (50); the wireless transceiver (100) includes means for receiving returned information (1100), in particular traffic situation reports (1200), the information queries (1000,) being provided with a predefined first validity time value (1402).

14. The wireless transceiver (100) according to Patent Claim 13, wherein the wireless transceiver (100) has means for registering the time of the first information query (1000) and for generating a message when the first predefined time period (1401) after the transmission of

the first information query (1000) is exceeded.

15. The wireless transceiver (100) according to Patent Claim 13 or 14,
wherein the wireless transceiver (100) includes means
- for automatically transmitting the second information query (1001) after a second predefined time period (1404) has been exceeded;
- for starting the second predefined time period at the time of the first information query (1000), and
- for restarting the first predefined time period (1401) at the time of the second information query (1001),
and the second predefined time period (1404) is greater than the first predefined time period (1401).

16. The wireless transceiver (100) according to Patent Claim 13 or 14,
wherein the wireless transceiver (100) includes means
- for transmitting the second information query (1001) upon user request (1821), and
- for restarting the first predefined time period (1401) at the time of the second information query (1001).

17. The wireless transceiver (100) according to one of Patent Claims 13 through 16,
wherein the wireless transceiver (100) includes a memory (140) in which received traffic situation reports (1200) can be stored.

18. The wireless transceiver (100) according to one of Patent Claims 13 through 17,
wherein the wireless transceiver (100) includes means for determining its position, in particular in a road network.

19. The wireless transceiver (100) according to one of Patent Claims 13 through 18,

wherein the wireless transceiver (100) includes means for generating and transmitting information queries (1000, 1001) on the basis of the position of the wireless transceiver (100).

20. The wireless transceiver (100) according to one of Patent Claims 13 through 19, wherein the wireless transceiver (100) includes means for selecting navigation messages (1300) from traffic situation reports (1200) and for making them available to a navigation unit (160).

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Abstract

A method and a wireless transceiver (100) are described which are used for requesting and processing information, a first information query (1000) being transmitted by the wireless transceiver (100) and information (1100) being returned by a service provider (10) via a wireless network (50) to the requesting wireless transceiver (100), the information query (1000) being provided with a predefined first validity time value (1402) and the returned information (1100), in particular in the form of short messages, being provided with a predefined second validity time value (1403) by the service provider (10).

(Figure 2)

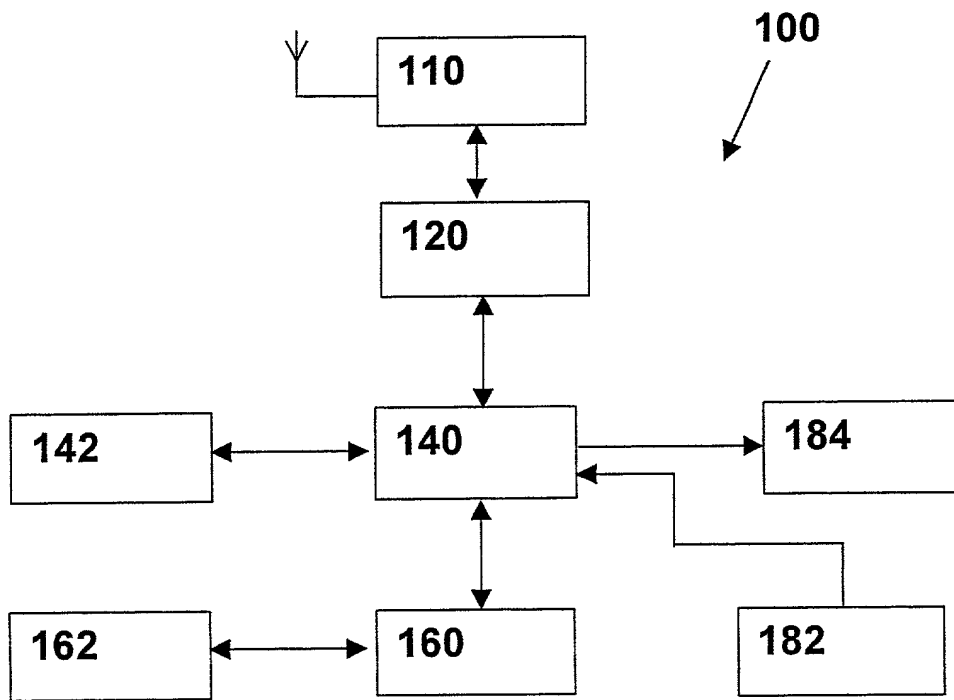


Fig 1

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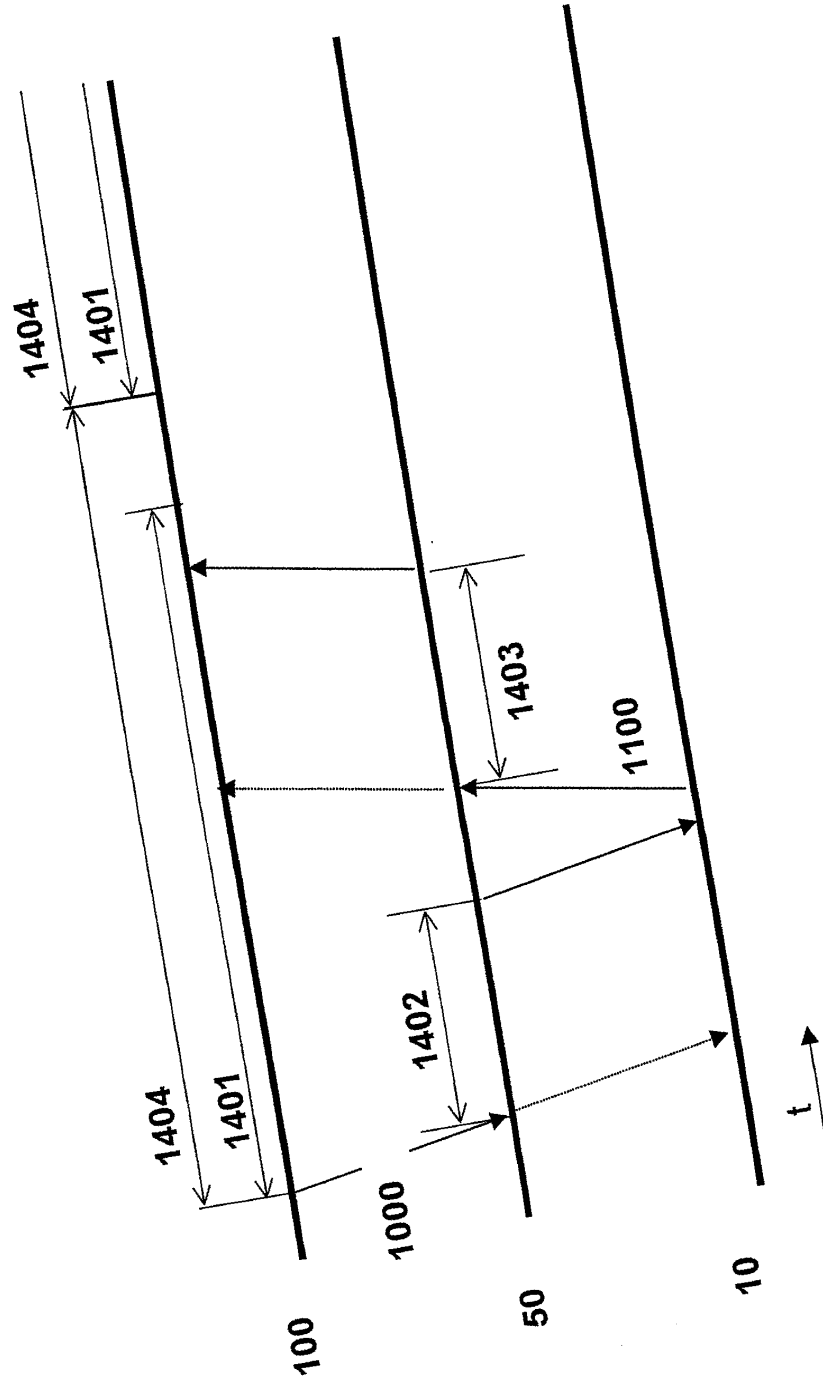


Fig 2

09/856989

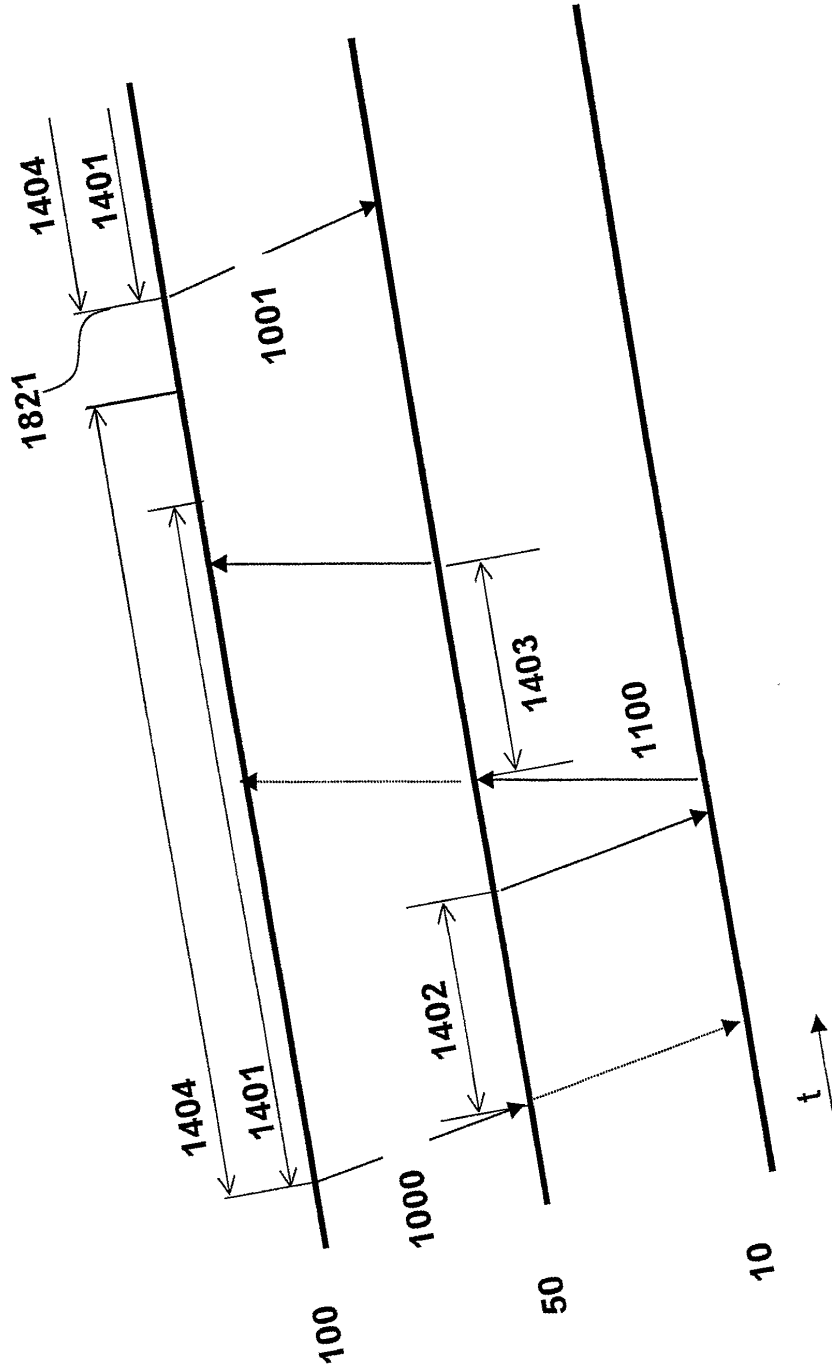


Fig. 3

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **METHOD AND WIRELESS TRANSCEIVER FOR REQUESTING AND PROCESSING INFORMATION**, for which an application for Letters Patent was filed as PCT International Application No. **PCT/DE99/03659** on **November 23, 1999**.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

Number	Country	Day/month/year filed	Priority Claimed Under 35 USC §119
198 55 230.0	Fed. Rep. of Germany	November 30, 1998	YES

And I hereby appoint Richard L. Mayer (Reg. No. 22,490) and Gerard A. Messina (Reg. No. 35,952) my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

Please address all communications regarding this application to:

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CUSTOMER NO. 26646

Please direct all telephone calls to Richard L. Mayer at (212) 425-7200.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful and false statements may jeopardize the validity of the application or any patent issued thereon.

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